

NAME: _____

DATE: _____

Unit-2 Mastery Assessment (version 635)

Question 1 (10 points)

Let f represent a function. If $f[48] = 2$, then there exists a knowable solution to the equation below.

$$y = 36 \cdot f\left[\frac{x}{4} + 43\right] - 38$$

Find the solution.

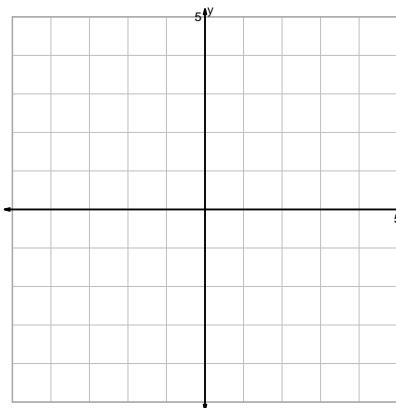
$x =$

$y =$

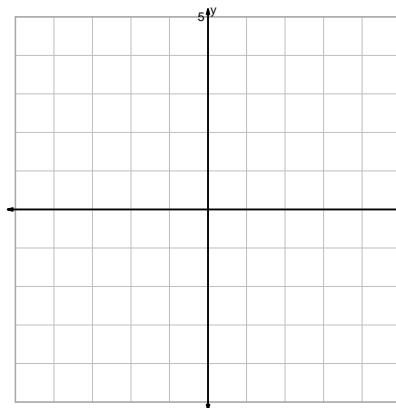
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

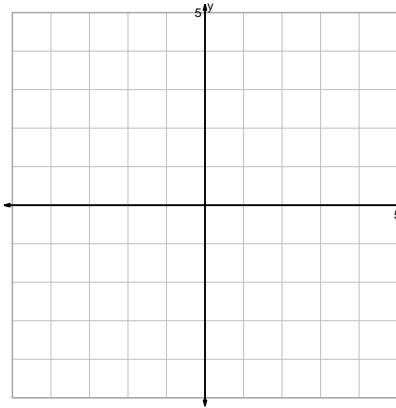
$$y = 2^x - 2$$



$$y = (2x)^2$$



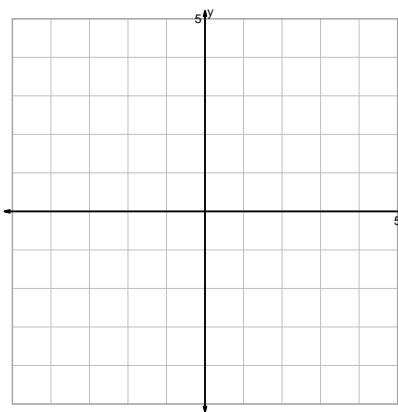
$$y = x^2 + 2$$



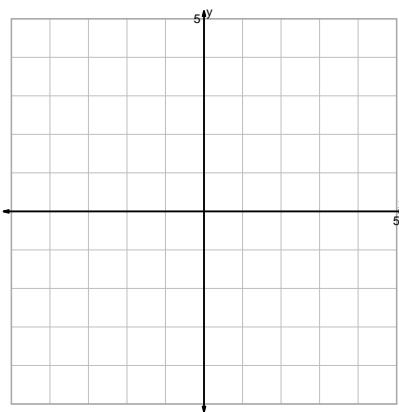
$$y = \left(\frac{x}{2}\right)^3$$

Question 2 continued...

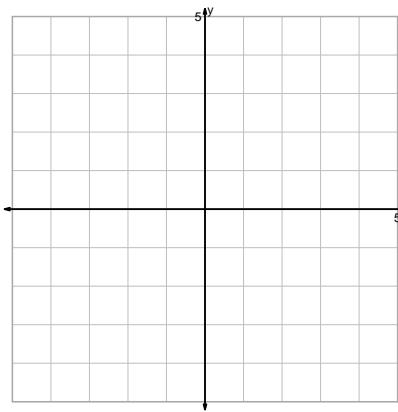
$$y = \frac{\sqrt{x}}{2}$$



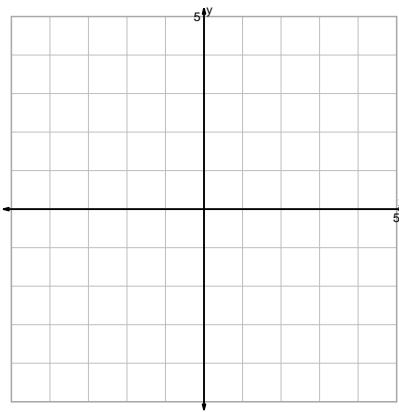
$$y = 2^{-x}$$



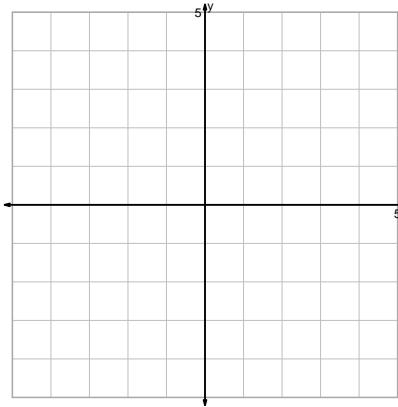
$$y = -\log_2(x)$$



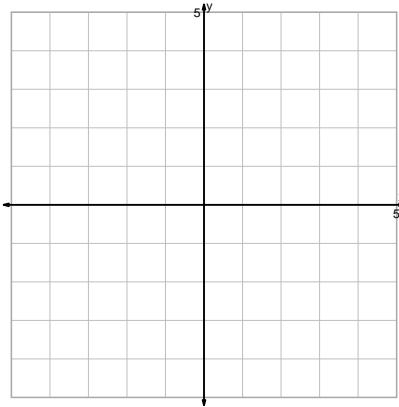
$$y = \log_2(x-2)$$



$$y = 2 \cdot x^3$$

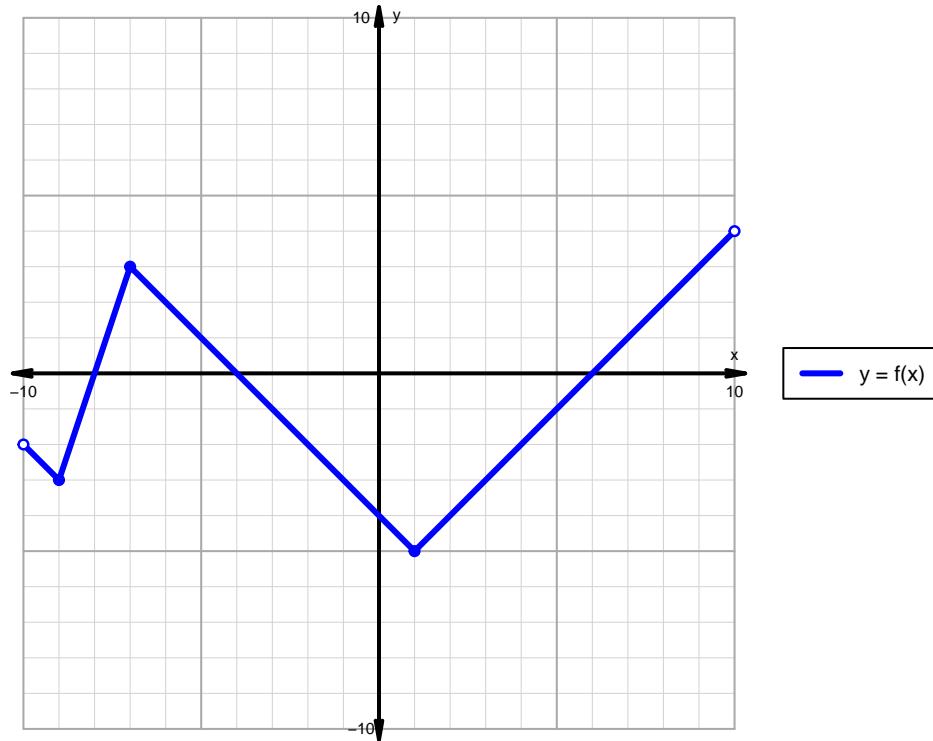


$$y = \sqrt[3]{x+2}$$



Question 3 (20 points)

A function is graphed below.



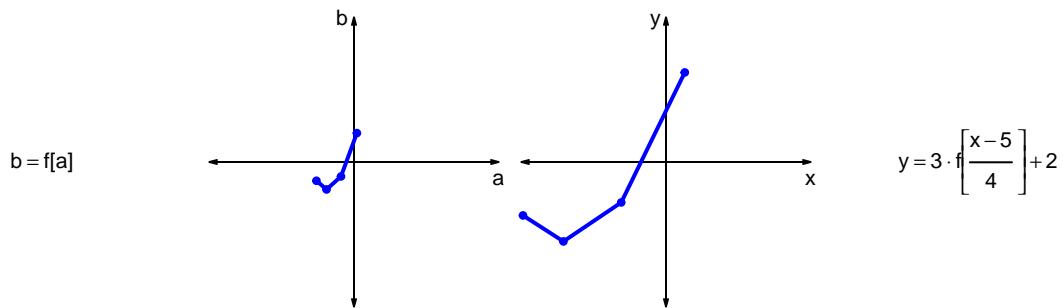
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 3 \cdot f\left[\frac{x-5}{4}\right] + 2$ are represented below in a table and on graphs.

a	b	x	y
-26	-13	-99	-37
-19	-19	-71	-55
-9	-10	-31	-28
2	20	13	62



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 3 \cdot f\left[\frac{x-5}{4}\right] + 2$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

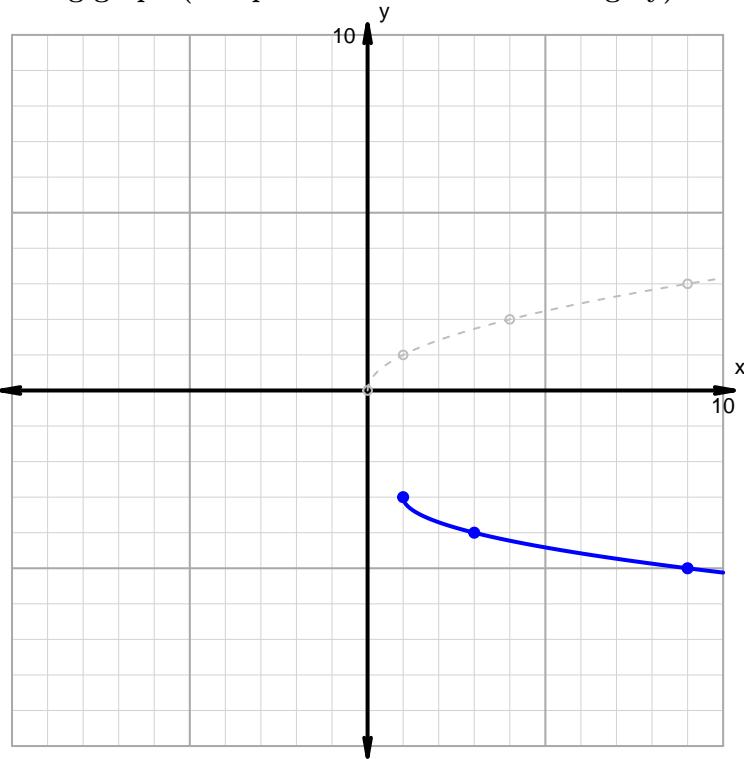
Horizontal transformations

1. Horizontal stretch by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Translate up by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = 3 \cdot |x + 6| - 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	